

HP E2466B

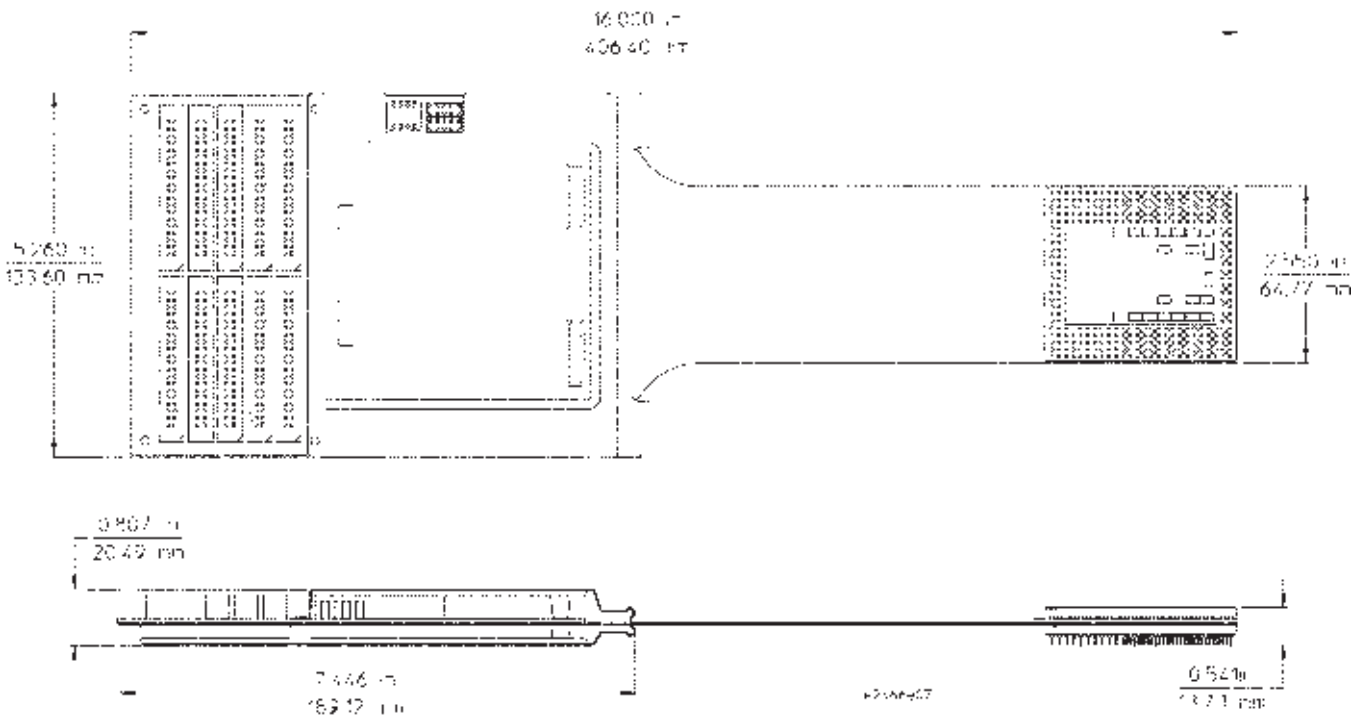
Preprocessor Interface for the Intel Pentium® Pro Processor

**For use with the
HP 16500B/C logic
analysis system**

The HP E2466B preprocessor interface for the Pentium® Pro processor allows you to easily trace the operation of a Pentium Pro processor system. The preprocessor and its transaction tracker software for the HP 16500B/C logic analysis system

simplify the analysis of the Pentium Pro multiprocessor bus. Bus transactions are summarized in the state listing display for rapid interpretation of bus operation. Bus timing diagrams displayed as waveforms are overlaid with status information for quickly

identifying bus conditions. In addition, your time to insight into critical Pentium Pro system problems can be further reduced by using the HP 16505A prototype analyzer with the HP E2466B, and the HP 16500B/C logic analysis system.



Capturing Transactions

The HP E2466B keeps track of the Pentium Pro processor, making it simple for you to analyze its operation. Because several transactions may be pending on the Pentium Pro processor bus at one time, the HP E2466B preprocessor and transaction tracker keep track of the start and end of each bus phase. This information is used to save you time, by presenting a state listing of bus activity grouped by complete transactions.

Identifying Transactions

The transaction type is identified for you by the HP E2466B and presented in the analyzer's listing display. Each transaction displayed starts with the request type, such as memory read, I/O write, and code read. Additional information provided in the listing display includes error phase results, snoop results, response, and data. Transaction duration, measured in bus clocks, is summarized at the end of each transaction listed.

Selecting Transactions

Focus your analysis of the activities on the Pentium Pro multiprocessor bus by choosing to display those operations that give you the best view of the problem. Included with the HP E2466B is a complete set of filters that allow you to selectively list transactions by agent and transaction type. For example, you can list only branch trace messages originating from agent 0.

Displaying Bus Phase

For your convenience, each phase of a transaction is displayed in order of occurrence. The HP E2466B clearly identifies and presents request, snoop, error, response, and data phases of the Pentium Pro processor's multiprocessor bus.

Viewing Bus Timing

Visibility into bus timing of the Pentium Pro processor is made easy with the HP E2466B preprocessor. Configuration software provided with the HP E2466B presets the HP 16500B/C logic analyzer's timing display into Pentium Pro processor bus-specific-signal groupings. Bus status information overlays each waveform group,

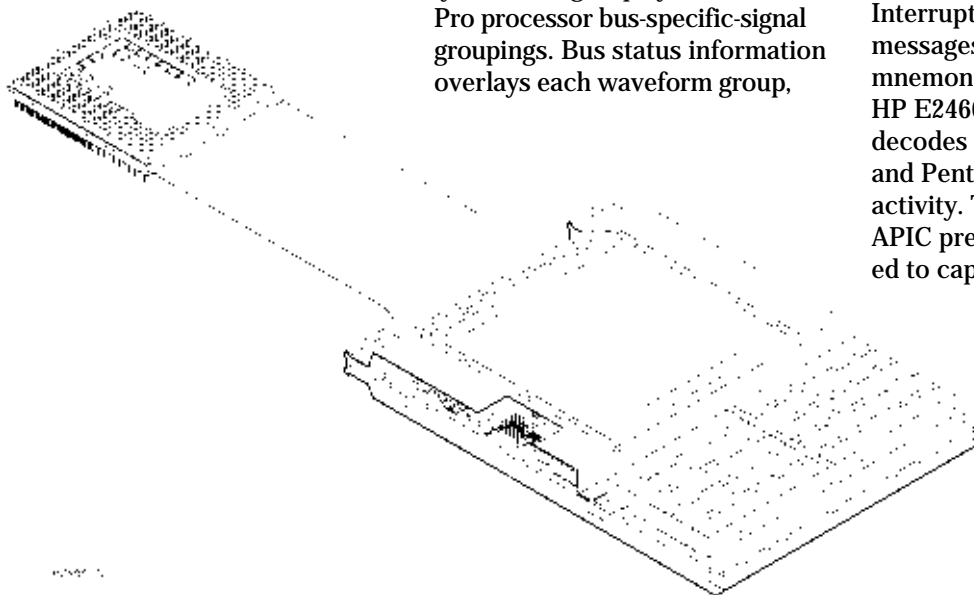
enhancing your insight into the sequence of Pentium Pro processor bus events. Bus timing measurements are made simply and directly using markers active in the logic analyzer timing display.

Viewing Instructions

The HP E2466B includes an HP 16505A based inverse assembler that displays code execution in familiar Intel mnemonics. The inverse assembler takes advantage of the Pentium Pro processor's branch trace message (BTM) bus transactions. Branch trace messages are special bus transactions issued by the CPU (when enabled) that indicate the "from" and "to" addresses of a branch. Because of BTMs, the HP E2466B inverse assembler displays a listing of only the instructions executed by the processor(s). For inverse assembly, a run control unit, such as the HP E3493B, is necessary to enable branch trace messages and disable caches.

Observing APIC Bus Messages

View Advanced Programmable Interrupt Controller (APIC) bus messages in easy to understand mnemonics. Included with the HP E2466B is software that decodes both APIC bus activity and Pentium Pro processor bus activity. The HP E2467A is the APIC preprocessor interface needed to capture APIC bus signals.



Features

Transaction tracker bus phase displays

Request Phase
Snoop Phase
Error Phase
Response Phase
Data Phase
Summary Information (transaction timing measured in bus clocks)

Display filter options

Selectively display the most important transactions by using state listing filters.

Agents

	ADS#, DID[7:0]#, (Ab[23:16]#)
Symmetric 0:	Show/Suppress
Symmetric 1:	Show/Suppress
Symmetric 2:	Show/Suppress
Symmetric 3:	Show/Suppress
Priority:	Show/Suppress

Transaction Types

	ADS#, REQa[4:0]#
Deferred Replies:	Show/Suppress
Interrupt Acknowledge:	Show/Suppress
Special Transactions:	Show/Suppress
Branch Trace Messages:	Show/Suppress
I/O Reads:	Show/Suppress
I/O Writes:	Show/Suppress
Memory Read & Invalidate:	Show/Suppress
Memory Reads – Data:	Show/Suppress
Memory Reads – Code:	Show/Suppress
Memory Writes:	Show/Suppress
Memory Writebacks:	Show/Suppress

Note: Agents and transaction type filter terms are combined in display by “ANDing.”

Clock Qualification

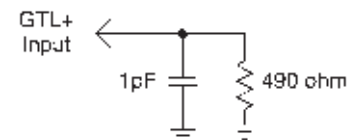
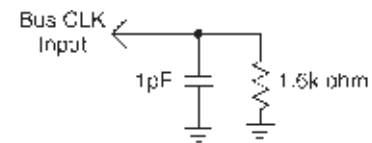
Expanded Mode: Captures all snoop stalls and data wait states.

Compacted Mode: Maximizes logic analyzer memory use by not storing snoop stalls and data wait states.

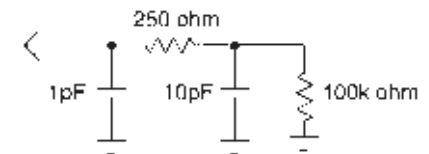
Specifications

Processor	Pentium Pro processor
Package	387 pin SPGA
Logic Analysis Pods Required	10 (compatible with 2-card HP 16550A, 3-card HP 16555A/D, or 3-card HP 16556A/D logic analyzer modules for the HP 16500B/C logic analysis system)

Signal Line Loading



3.3V tolerant, APIC, and JTAG Inputs



Preprocessor Clocking Modes	State/Clock-Expanded Mode State/Clock-Compacted Mode (Logic analyzer stores bus state on each qualified BCLK)
Clock Frequency	66 MHz maximum for external BCLK
Target Signal Amplitude	800 mV p-p minimum for all GTL+ signals
Timing Analysis	3 ns channel-to-channel skew (typical)
Power Requirements	Supplied by the logic analyzer
Environmental Temperature	
Operating	0 to 55 °C (+32 to +131 °F)
Nonoperating	– 40 to 75 °C (– 40 to +167 °F)
Altitude	
Operating	4,600 m (15,000 ft)
Nonoperating	15,300 m (50,000 ft)
Humidity	Up to 90% noncondensing. Avoid sudden, extreme temperature changes that could cause condensation within the instrument.

Ordering Information



HP E2466B

Preprocessor interface for the Intel Pentium Pro processor
(requires the HP 16500B/C mainframe with any set of the logic analysis cards listed below, the HP 16505A, and the HP E3493B run-control or equivalent)

Logic Analysis Cards

HP 16554A	(3 cards required for use with the E2466B) 512 K Sample, 70 MHz state/250 MHz timing logic analyzer module
HP 16555A/D	(3 cards required for use with the E2466B) 1 M/2 M Sample, 110 MHz state/500 MHz timing logic analyzer module
HP 16556A/D	(3 cards required for use with the E2466B) 1 M/2 M Sample, 100 MHz state/400 MHz timing logic analyzer module
HP 16550A	(2 cards required for use with the E2466B) 4 K Sample, 100 MHz state/500 MHz timing logic analyzer module

HP 16500B/C	(1 required for use with the E2466B) Logic Analysis System Mainframe
HP 16505A	(1 required for use with the E2466B) Prototype Analysis System
HP B4600A	(optional) System Performance Analysis
HP E3493B	(Recommended. Required for inverse assembly.) Processor Probe

Warranty Information

This Hewlett-Packard product has a warranty against defects in material and workmanship for a period of one year from date of shipment. During this warranty period, Hewlett-Packard Company will, at its option, either repair or replace products that prove to be defective.

Related HP Literature

HP 16500C Logic Analysis System and HP 16505A Prototype Analyzer, 5965-3187E

HP E2467A Intel APIC Bus Preprocessor Interface, 5965-3000E

HP E3493B Pentium® Pro/Pentium II Processor Probe, 5965-6036E

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<http://www.hp.com/go/tmdir>
<http://www.hp.com/go/emulator>
<http://www.hp.com/go/logicanalyzer>

You can also contact one of the following centers and ask for a test and measurement sales representative.

United States:

Hewlett-Packard Company
Test and Measurement Call Center
P.O. Box 4026
Englewood, CO 80155-4026
1 800 452 4844

Canada:

Hewlett-Packard Canada Ltd.
5150 Spectrum Way
Mississauga, Ontario
L4W 5G1
(905) 206 4725

Europe:

Hewlett-Packard
European Marketing Centre
P.O. Box 999
1180 AZ Amstelveen
The Netherlands
(31 20) 547 9900

Japan:

Hewlett-Packard Japan Ltd.
Measurement Assistance Center
9-1, Takakura-Cho, Hachioji-Shi,
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